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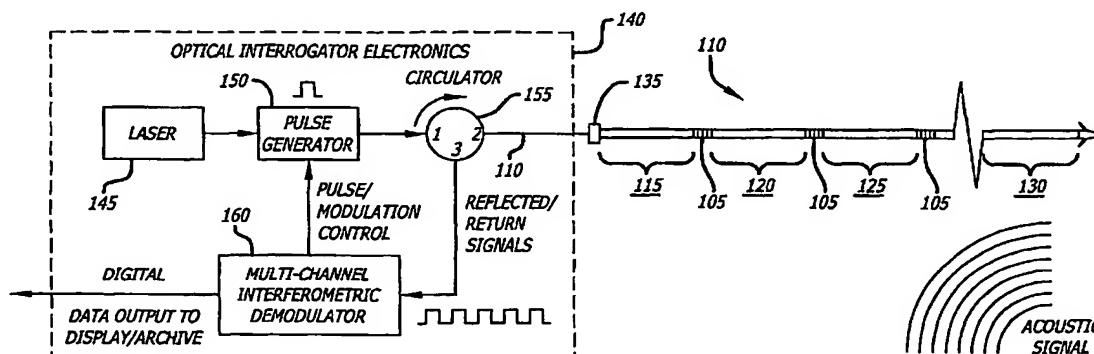
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(54) Title: DOWNHOLE FIBER OPTIC ACOUSTIC SAND DETECTOR



(57) Abstract: An array of fiber optic acoustic sensors (115, 120, 125, 130) is formed within an optical fiber (110). The array of acoustic sensors (115, 120, 125, 130) may be deployed to a well bore (55), such as acoustic signals resulting from sand invading the well bore (55). A plurality of acoustic sensors may be formed by forming a plurality of periodic refractive index perturbations at selected intervals within the acoustic sensing section (115) of the optical fiber (110). The optical fiber (110) may be deployed within the well head within a suitable protective arrangement such as deployed through a tube or armor (35) using a suitable arrangement such the optical fiber (15) is protected, yet retains sensitivity to acoustic signals. The fiber optic acoustic sensor of the present invention may be unobtrusively mounted on the exterior of a well casing such that the sensor is not in the fluid stream.